Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Journal of the Society of Arts.

FRIDAY, AUGUST 24, 1855.

MEMBERS' VISIT TO PARIS.

Members are reminded that the Society's cards, railway tickets, and passports, will be issued from the Society's house from the 27th of August to the 1st of September, both inclusive. None can be issued after that period.

From the 3rd of September to the 15th of September, the Society will be officially represented in Paris at the rendezvous, 14, Rue du Cirque, where Members are particularly requested on their arrival to register their addresses in Paris.

Members and Institutions requiring cards, tickets, or passports, are reminded that it is absolutely necessary to give their own name and those of their friends, the names of the Representatives and others nominated by the Institutions, the route they propose to take, the number of railway tickets required, and whether single journey or return.

Members must also state the day of their departure, in order that the date may be inserted in the railway-ticket, as each ticket is available only for a certain number of days after date.

Passports are free to the Members and to the Representative of each Institution.

To Members' friends, and those nominated by the Institutions other than the Representative, passports are 5s. each.

Members and Institutions must accompany their requests with the necessary remittance.

Unless all the particulars required are sent, it will be impossible for the Secretary to comply with the wishes of the Members.

A synopsis of the various routes to and from Paris, with the cost of each, appeared in the last number of the Society's *Journal*.

A FEW REMARKS ON ANIMAL PRODUCTS.

By P. L. Simmonds.

Among the great variety of animal products, specimens of which it would be desirable to obtain for the Trade Museum, are some of the following, with details as to the amount and value of the commerce carried on in them at various localities, and the comparative prices, modes of preparation and preservation, transport, &c. Firstly,

Products of Animals.

Specimens of preserved provisions and animal food of all kinds, smoked and spiced meats, pemican, home and American made. Buffalo or moose deer meat is dried, pounded, and mixed with melted fat. Cured Meats from various Countries—The preserved soup of Russia, preserved provisions of Australia, preserved turtle from the Gulf of Mexico, salted lobsters from the British American provinces, Buffalo humps. Preparations of Blood—Meat dried and preserved in a fresh state, simply by desiccation, as shown in the Swiss department in 1851; osmazone and meat biscuits. Dried beef forms a large article of import into New Orleans. The sun-dried biltongue (literally ham tongue) of the Cape Colony has never, that I am aware, reached this country; it consists of strips of raw meat cut out of the loins, sirloins, or fleshy parts of cattle, or the larger antelopes, which, sprinkled over with salt, and exposed to a warm sun, and thus sun-dried, constitutes the usual food of the pastoral farms in the new settlements of the Cape Colony for months.

Jerked beef, or charque, forms a large article of consumption in Brazil, Cuba, and some other quarters. The preparation of the dried meat is principally carried on in Chile and Buenos Ayres, but upwards of 20 million pounds are annually sent from Rio Grande do Sul to the other provinces of the Brazilian empire. When salted and smoked, or dried in the sun, it is called Sesina. About 6000 cwt. of charque, with a proportionate quantity of tallow and fat for domestic purposes (grasa), are shipped annually from Talcahuano to Lima.

Beef jerking is confined to the hot and dry summer months, the jerking season in Chile being looked forward to like harvest time in England. In well-regulated establishments, the labour is divided, the jerkers having nothing to do with the killing, skinning, &c. So expert are they as to excite the astonishment of novices at the rapidity with which they slice the animal up, the slices being deprived of fat, and so thin as to admit of a quick sun drying them, on hurdles well elevated above the ground. After being thoroughly dried, the slices are made into long bundles, and sewed up in hides for farm use or exportation.

Much benefit would ensue from jerking meat on the distant Australian out-stations, in saving the great expense of salt and cartage from the seaports, supplying a food that would not produce scurvy, or those bilious and dysenteric complaints to which salted meat in warm countries gives rise, while furnishing a useful export to the Mauritius, Ceylon, Africa, and India, in exchange for their sugar, coffee, rice, and other staples.

In the Brazils and Cuba jerked beef is in general use among both whites and blacks, and although unknown as yet in India, yet what benefit would it not confer on our European troops, in substituting it for salt meat where fresh could not be had. How useful would the knowledge of jerking be to our troops cooped up in the Crimea, as they could at once jerk the cattle captured or purchased, thus saving the expense of feeding until required for slaughter, even when food for them was attainable. How easy also, from the trifling weight, for each soldier to carry on a march his jerked ration, which a slight grill suffices to cook, though often eaten without this.

In Chile, when the horned cattle are sufficiently fat, or rather at the killing season, which is about the months of February and March, from 500 to 1,000, according to the size of the farm, are slaughtered. The whole of the fat is separated from the meat, and melted, forming a kind of meat, called grasa, which is employed for domestic purposes. The tallow is also kept separate, and the meat is jerked. This process is performed by cutting the fleshy substance into slices of about a quarter of an inch thick, leaving out all the bones. The natives are so dexterous at this work that they will cut the whole of a leg, or any other large part of a bullock into one uniformly thin piece. The meat thus cut is either dipped into a very strong solution of salt and water, or rubbed over with a small quantity of fine salt. Whichever mode of curing is adopted, the whole of the jerked meat is put on the hide and rolled up for ten or twelve hours, or until the following morning. It is then hung on lines or poles, to dry in the sun, which being accomplished, it is made into bundles, fastened with thongs of fresh hide, forming a kind of network, and is ready for market. In this operation it loses about one-third of its original weight. The dried meat (charque) finds immediate sale at Lima, Arica, Guayaquil, Panama, and other places. It furnishes a great part of the food of the lower classes and the seamen, being the general substitute for salt beef and pork.

The grease and tallow also meet with ready sale, and are of more value than the meat. The females are usually employed in cutting up the fat, and frying it for grease. The tongues are the only part of the head that is eaten, the remainder being left to rot.

The hides are usually consumed in making bags for grain, pulse, &c., thongs for the various purposes to which rope is applied in Europe, or leather of a very good quality.

The various products of the horse—horse tails, horse hides, horse manes, mare's grease, hoofs, &c., are

valuable. In some years Russia has exported 20,000 to 30,000 horse hides. From the River Plata we receive a very considerable number.

There are immense quantities of horses in Russia; a *taboon* or herd consists often of about 1,000 horses; and some of the great land owners possess from eight to ten taboons. Their commercial products even are valuable, considering the slight expense and trouble at which they are reared and maintained.

The wild horses in South America, roaming over the pampas, are killed solely for their hides and fat, and the products of their manes and tails. The fat (mare's grease, as it is commercially termed), upon arrival here, and at New York, is transmuted into soap, and is doubtless often admired for its aroma and variegated colours.

In Paris, the value of a dead horse has been computed (by M. Duchatelet), if properly managed, to be worth from 60 to 110 francs. The hair weighs from 100 to 200 grammes, worth from 10 to 30 cents. The skin weighs from 24 to 34 kilogrammes, and is worth from 13 to 18 francs. The blood is worth from 2 to 3 francs. The flesh, which weighs from 150 to 200 kilogrammes, is worth, for manure or food for other animals, from 35 to 45 francs. The fat is worth about 1 franc 20 cents. the kilogramme, but the quantity is not very great. The shoes, the hoofs, and the bones, are likewise all worth small sums, which make up what is stated above.

In consequence of a Report by the Committee of Public Health, the Austrian Government recently allowed the butchers to sell horse meat to the public in the markets of that empire.

Horse Flesh is a common article of food in Toorkisthan. Captain Burslem says: "I remarked that aged horses were very rarely met with, and on inquiring the reason was informed that the horses were so violently worked when young as soon to break down, after which they are slaughtered and made into *kabobs*. I was assured that the eating shops of Cabul and Kandahar always required a great supply of horse-flesh, which is much liked by the natives, and, when well-seasoned with spices, is not to be distinguished from other animal food."

Under the local name of "dending," the muscles of the deer, the buffalo, the wild hog, jerked, or dried in the sun, form an article of exportation from the Indian islands, principally to China. Deer's sinews to the extent of about 200 piculs (250 cwts.) are annually exported from Siam.

Ghee is the butter made from the milk of cows and buffalos, and clarified. It is an article of very considerable commerce in various parts of India and Northern Africa, and is generally conveyed in duppers, or bottles, made of hide, containing from 10 to 40 gallons each. Ghee will continue sweet for some time, but the Somalis in Northern Africa are celebrated for melting down sheeps' tails, and mixing the fat with the ghee to increase the quantity, and this gives it a most disagreeable odour.

In India there are two kinds of ghee—cow and buffalo ghee. At Bombay the commercial kinds of ghee are classified into Kurrachee, Cutch, and Concan. At Madras into westward and northward.

One hundred female buffalos in the East, according to Colonel Low, will give yearly, one with another, 9125 gantangs of milk (the gantang containing about 256 cubic inches). Even in that quarter adulteration is practised, for one-fourth part of water is added, and owing to the very rich nature of the milk of the animal, this dilution s not easily detected

The produce of ghee from pure milk in the Straits, is as high as one-eighth, 15 gantangs of milk making one picul (133⅓lbs.) by weight of ghee. One hundred female buffalos will yield 76 piculs of ghee (90¼cwt.) in a year. The butter milk is of little value, and is generally given to the buffalos to drink. Each native consumes, when he can obtain it, about 30 chittacks of ghee monthly, and there are 1600 chittacks in a picul.

Buffalo butter finds comparatively a limited sale in the Straits settlements, that made from cow's milk being preferred, but what is sold to the shipping as cow's milk is a mixture of the two, or merely dyed buffalo butter. A gantang of rich cow's milk yields about half a pound of butter. The quality of the ghee, owing to the richness of the pasturage, is far superior in the eastern parts of the Archipelago to that brought from India.

In India the common Bazar cow will yield but three or four seers, or quarts, of milk, while an English cow, housed and well fed, will give 14 to 16 quarts. In Behar a buffalo cow yields ten seers of milk at two daily milkings, and the quality of the milk is richer than that of the country cow; the milk of the latter yields about one-sixteenth of its weight of butter. The dairy is the most lucrative branch of Indian agriculture. In Mysore the natives never use raw milk, objecting that it has no taste. It is boiled from one to three hours. A little of the previous day's tyre, or curdled milk, is added to promote coagulation, which is completed by the next morning. From the top five or six inches are taken and put into an earthen jar, when it is churned by rapidly trundling in it a split bamboo. In half an hour some hot water is added, and when the churning has been repeated for another half hour, the butter usually forms. The demand for milk in the East is almost unlimited, as so little animal food is eaten, and hence arises the large number of vegetable oils that are raised for food.

Butter is the universal sauce of the Arab, and the consumption of it is immense; their vegetable dishes all float in butter; with it they work their *adjoue*, or date paste, or cake, into a proper consistency; dried corn or bread crumbs, boiled in butter, is a common breakfast with all classes, and in the desert, the kunmayes, or truffles, are prepared for use in the same manner. In short, butter may be said to be to the Arabs what the potato is to the Irishman—it forms an indispensable part of his diet, and besides the various forms in which it is taken with other articles, it is a common practice with both Bedouins and town's people to drink a coffee cup full of butter every morning, the former, and the lower order of the latter, adding another half cup, which, to the disgust of strangers, they snuff up their nostrils! Arab butter is made from the milk of sheep and goats, that of camels not being used for the purpose. The home supply is not nearly sufficient for the consumption, and butter consequently forms an important article of importation. It is brought from the opposite coast of Africa, chiefly from Souakin, Massouah, and Upper Egypt.

Mr. Johnston (Travels in Abyssinia) thus describes the mode of making the ghee, or fluid butter there: "Churning is performed by the milk being placed in large skin bags, suspended upon the hips by a leathern thong passing over the shoulders and across the breasts of the female. A quick semi-rotatory movement of the trunk continually agitates the contents, until the butter is formed in soft white lumps; it is then taken out with the hand as it collects upon the surface of the milk, and is placed into lesser skins, where in a few hours it assumes the appearance of a light-yellow oily fluid—the ghee of the Berberah market—from whence it is exported in great quantities to India and the Persian Gulf."

Specimens of cheese from the milk of various animals, and details as to the manufacture and preparation, with the cost at the place of production, would be interesting. Samples of the cheese made from the sweet and rich milk of the rein-deer, and of the caskaval cheese of the Danube, with various cheeses calculated to stand change of climate, and full information as to the processes followed, are desiderata. The chervice or clear fat of the carcase and marrow of the ox, boiled, is much used in Constantinople and the coasts of the Black Sea, for culinary purposes.

Specimens of the various solidified milks made in this country, on the Continent, and in America, with information as to their relative value, are highly important, now that sea travel is so large a business. A committee of

medical gentlemen, appointed by the New York Academy of Medicine, recently appointed to visit and report upon Mr. Blatchford's manufacture of solidified milk, at Armenia, in the State of New York, thus describe the process :—

"To 112lbs. of milk, 28lbs. of Stuart's white sugar were added, and a trivial proportion of bi-carbonate of soda (a teaspoonful), merely enough to insure the neutralizing of any acidity which, in the summer season, is exhibited even a few minutes after milking, although inappreciable to the organs of taste. The sweet milk was poured into evaporating pans of enamelled iron, embedded in warm water heated by steam. A thermometer was immersed in each of these water baths, that, by frequent inspection, the temperature might not rise above the point which years of experience have shown advisable.

"To facilitate the evaporation, by means of blowers and other ingenious apparatus a current of air is established between the covers of the pans and the solidified milk. Connected with the steam-engine is an arrangement for stirrers, for agitating the milk slightly while evaporating, and so gently as not to *churn* it. In about three hours the milk and sugar assumed a pasty consistency and delighted the palates of all present. By constant manipulating and warming, it was reduced to a rich creamy-looking powder, then exposed to the air to cool, weighed into parcels of a pound each, and by a press, with the force of a ton or two, made to assume the compact form of a tablet (the size of a small brick), in which shape, covered with tin-foil, it is presented to the public.

"Some of the solidified milk which had been grated and dissolved in water the evening previous, was found covered with a rich cream. This, skimmed off, was soon converted into excellent butter. Another solution was speedily converted into wine-whey, by a treatment precisely similar to that employed in using ordinary milk. It fully equalled the expectation of all, so that solidified milk will hereafter rank among the necessary appendages of the sick room. In fine, this article makes paps, custards, puddings, and cakes, equal to the best milk; and one may be sure it is an unadulterated article, obtained from well-pastured cattle, and not the produce of distillery slops—neither can it be watered.

"For our steam ships, our packets, for those travelling by land or by sea, for hotel purposes or use in private families, for young or old—we recommend it cordially, as a substitute for fresh milk."

Mr. S. Piesse prepares a lactin or artificial milk in the following manner:—Honey, 4 oz., gum arabic powder, half an ounce, 3 yolks of eggs, fine salad oil, 6 ounces. Mix the honey and the gum first, then add the egg, and finally gradually mix in the oil. One ounce of the lactin dissolved in half a pint of water, produces half a pint of artificial milk. A more simple, and equally effective process, however, for the purposes of the emigrant, who wishes to have milk for his family on a long voyage, is as follows:—Put milk into bottles well corked, place them into a pan with cold water, and gradually rise to the boiling point; take them from the fire, and let the bottles cool in the water in which they were boiled. The milk will remain perfectly sweet for upwards of six months. In Italy they carry the process further, in the production of a dry substance called *lattenia*. Instead of putting the milk into bottles, they evaporate it to dryness under constant stirring. A dry mass is thus obtained, which, when dissolved in water, is said to possess all the properties of the best milk.

An object of curiosity would also be the collection of specimens of the bezoars, a concrete substance found in the stomach and gall-bladder of many animals, and to which several valuable properties were formerly ascribed. They have been obtained from the wild boar, the ox, the camel, the chamois (or wild goat), and the guanaco.

In my next communication I shall describe some other animal products of commerce on which further information is desirable.

ON THE SANITARY APPLICATIONS OF CHARCOAL, AND ON VENTILATION.

By J. FORBES WATSON, A.M., M.D., BOMBAY ARMY.

(*Concluded from page* 655.)

With regard to the warming of the air for winter use, in this and other climates, a few words may be said. The method of heating it by means of steam or hot water pipes is an excellent one, but the process could often be more cheaply and readily carried out by passing the air through wrought-iron tubes, arranged, for the sake of economising the heat of the fuel, in a manner somewhat similar to those in tubular boilers, &c. The barriers hitherto opposed to the warming of the air by the direct action of heated iron, as in this way, and in the case of stoves, arises chiefly from the disagreeable empyreumatic odours produced, and which are supposed to result from the partial charring of the organic impurities usually present in the air, and perhaps also, in the case of overheated cast iron, from the giving out of minute quantities of sulphur, and, it may be, of phosphorus combined with hydrogen. These produce head-ache, accompanied with a disagreeable dry sensation, which is corrected, in some measure, by allowing a little water to evaporate within the apartment so heated, and perhaps in all cases the admixture of a small amount of vapour with the air, when artificially heated, will be found of use, as it seems to "temper" it in some way, which has not yet been very well explained. Supposing, then, that the disagreeable effects produced on the system when air is heated in this manner does arise from previously-existing impurities, it is quite clear that if these were removed during the passage of the air through the filter, none such will be experienced, and in employing it for this purpose, I should feel inclined to recommend that the air be first heated, and afterwards *drawn*, by means of the fan, through the charcoal filter. In this case a small amount of moisture, if still required, could very readily be introduced, by having a portion of the delivering tube, shortly after leaving the fan, expanded and arranged with a small funnel and stop-cock, so as to present a flattened cavity for water, over the surface of which the heated air would have to pass. The great advantage of first heating the air is, that it enables the apparatus adopted for that purpose to be placed so as more readily to avoid accidents.

Given, then, purified air of the proper temperature and degree of humidity, passing at the rate of, it may be, hundreds of cubic feet per minute, and it comes to be a serious question, how to thoroughly diffuse it without causing "draughts" and dust, in the first place, and, in the second, so as to prevent the entrance of the impure or malarious air from the outside, and this leads me to make a few remarks on the subject of ventilation, strictly so-called, although it must not be forgotten that a true system ought to embrace all the objects, such as purity, and so forth, here indicated.

Ventilation, then, in its ordinary sense, and viewed strictly with reference to individuals, may be defined to be the constant, but insensible, changing of the atmospheric air over the human body, so as to ensure, in accordance with the above conditions, as far as possible, not only a fresh supply of air, but also the removal of that which is constantly being rendered impure from having fulfilled its part as the essential agent concerned in respiration, &c. And here it must be remarked that any system for the ventilation of a building in which a number of individuals are congregated involves a question of *dilution*, for it is practically impossible, as will be again shown, that all the impurities which are constantly being generated under such circumstances shall be immediately removed, and their contact with others entirely prevented. Indeed, to suppose otherwise would be to assume that *circulation* of the air could totally be prevented, and that every particle of impurity as evolved could be made to ascend almost vertically upwards, and be at once removed.

The point, then, as it seems to me, is to secure, as far as possible, *the maximum of dilution*, with the fulfilment of the other objects before indicated.

In considering this subject, it must be kept in view that atmospheric air follows exactly the same physical laws that other fluids do, and that forces acting on, or in, a given mass either of water or of air, will produce similar results. For instance, a large jet of water of sufficient force, if admitted into a tank partially filled with the same fluid, will pass in a straight line to the opposite, or resisting point, then recoil, so to speak, and thereafter become intermixed, to a certain extent, with the water already there. But, suppose that, instead of being a close vessel, the tank had an opening immediately opposite this entering stream or jet, it will be found that it will then pass almost directly out, and that only an extremely partial admixture of the two fluids will occur. Illustrations of these conditions are sometimes afforded by nature on a large scale, as when a river like the Rhine is seen to pass in its onward course direcily through a lake, or, as in the case of the Indus, to advance without commixture for a considerable distance into the ocean.

Suppose, however, that, instead of a jet of water forcing its way through in a given direction, we have one or more entrances for the supply of fresh quantities, and that moreover we establish currents, by having, it may be, several openings in the tank through which the water is allowed to escape, and what occurs? In this, as in the other cases, the amount of intermixture between the two fluids is comparatively small. Currents are established in straight lines betwixt the inlet and exit points, and the result is very similar to that in which the river passes through the lake.

Take, however, another view. Suppose that the entering stream of water, instead of being single, has been divided or broken, as it were, into an immense number of small jets, and that these are then admitted from a great number of points all round; and also not in lines perpendicular to the sides of the tank, but at various angles; and the result will then be the establishment of a series of revolving currents, which, passing in every direction, will secure a thorough intermixture of the two fluids. This, moreover, it must be observed, will occur the more readily, if the exit water, or that flowing from the tank, has been made to depend upon the amount of that entering, and not upon a fall or draught, as that would actually tend to interfere with an effective circulation by establishing straight currents in certain lines.

Let us see now how these simple illustrations can be applied to the subject in question. The proposition is—the best mode of inducing the thorough circulation within, and dilution of, the air in a given building; and in dealing with a question of this nature, we have only to consider how certain conditions affect the great majority of individuals.

A chamber filled with air may be supposed to represent the tank in the former case. Admit a jet of air into it—open a window against which the air is blowing—and the result will be partial diffusion, and a bad cold or face-tick, &c., to the unfortunate with whom it may come into contact, *en route*, or even after its recoil, should it strike with sufficient force against the opposite side. Suppose, however—and I may mention that examples of the following illustrations may be seen in London—that we resolve on at least preventing the injurious effects which proceed from "draughts," and have therefore our inlet and exit openings placed at a considerable height above the floor, and it is evident that the air will pass through in a manner similar to that of the stream of water in the former case.

Take another instance: instead of causing the air to pass directly out at the opposite side, let us have one large entrance opening above, and an exit one of similar size below it, and the results, although much more favourable in every way than those in the former case, will still be defective. The volume of air, if it reaches the opposite side at all, will recoil and seek an exit through the point of least resistance, which in this case is very nearly in a line with its newly-acquired direction.

Suppose, again, that we have a number of openings for the passage of the air, arranged at intervals around the sides, and that a large exhausting shaft, or shafts, is made to enter at the top of the chamber, and what takes place? The air is drawn from the lower openings in straight lines towards the shaft in the roof, and the result is that only the comparatively few individuals who happen to be placed at or near to the sides of the apartment will receive the requisite amount of fresh air, and even these will suffer from the effects produced by draught.

Take another instance—Suppose that, instead of allowing the air to enter at the sides, we resolve that at least the individuals in the apartment shall have the benefit of what we do admit, and adopt the plan of having openings or perforations in the floor, through which the air shall be made to pass, and the result, then, is dust, and the inevitable cooling of a portion of the human body which ought to be kept warm, viz., the feet.

We shall pass now to more favourable conditions. In order to avoid "draughts," let us retain our entering current at the height of seven or eight feet above the floor, but divide it by having several openings around the room, and also a number of exit ones at a lower level, and one of which may be represented by the chimney, &c. In this case the diffusion will be much more perfect than in any of the others, but still, between these entrance openings and the supposed exit ones, a certain amount of *direct* current will be established, which will actually tend to prevent diffusion, by impeding circulation.

If, however, the current of entering air—just as in the case of the stream of water—were broken, not into a few, but into an immense number of smaller ones, and that these, instead of passing into the chamber from one or two, should pass in from *all* sides; and that, moreover, these minute jets of air should also, as in the same instance, be made to enter at different angles, the result will be the establishment of a series of revolving currents, which in their course will ultimately leave no portion of the air in the chamber in a state of rest. This motion will, however, be insensible from a general movement of the air in masses, and, just as in the case of the water tank, I pre-suppose that the air is not being dragged out by means of shafts, &c., which will establish currents in straight lines, and produce the effects already explained, but that it is forced into an apartment in requisite quantity, and allowed to seek an escape by, in some cases, special openings, and at others through those thousand-and-one apertures which every chamber, however close, ordinarily affords.

From the foregoing, it seems clear, that in all cases, in order to ensure, according to the rule already laid down, as perfect ventilation as possible, the diffusion and circulation of the required amount of air cannot be accomplished by means of draught-shafts, or alternations in the temperature of relative bulks of air, and that no system can be efficient that does not take it, as it were, into its grasp, and make it do the work.

The illustrations already given can, I believe, be applied to any given instance, and although it will not be worth while to multiply examples, I may still be permitted to refer, for a moment, to the ordinary case of large hospitals, and other public buildings, in which fires are the great ventilating media during cold weather. Here, the ventilating shafts are the chimneys, the openings of which, instead of being, as in the former instances, placed in the roof, are brought to within about three feet from the floor. In such cases, the points of supply are the doors and chinks of the windows;—and now what occurs? Certain lines of currents are established, and a very partial diffusion takes place: a few patients, or others, as the case may be, receive a very large supply of air in the hurtful form of draught, while the majority are left in a still atmosphere, which is being rendered every minute

more impure by the emanations from their bodies. And while on this subject, I may mention that the hospital physician has continually to recognise, in practice, this same question of *dilution*, which I consider to be the essential point in ventilating all public buildings whatever —and to secure which he is obliged, as when dealing with typus fever, and gangrene, to diminish to often one-half the number of cases in wards devoted to infectious diseases; for if this precaution be not taken, the attendants themselves eventually become struck down, and a considerably greater proportion of the patients die.

Returning, however, to the case of the low-placed ventilating shaft, or chimney: from this and from the ascent of the heated air, are allowed to arise those conditions of intensified impurity in the higher portions of an apartment, by which an individual may be standing with his feet in a draught, and his head in the still foul air above, unless some method, such as that proposed by Dr. Arnott, be adopted.

The tendency of the heated air under all conditions will, of course, be to ascend, and a few small openings ought, therefore, to be left at the top; but in the system or mode which I am about to propose, the chief exit points ought to be low down, and under conditions in which it is an object of great moment to exclude the *outside* impure air, no *special* apertures ought to be made; for every apartment, however closely shut up, will still afford a thousand openings, of one sort or another, through which the air can be made to pass; but, at the same time, if these natural openings are, in any instance, too large, means must be taken to contract them sufficiently. In all these cases it must be noted, that I presuppose that the air is being made to pass into a given chamber, in quantities sufficient not only to fill it, but also to give, under ordinary circumstances, a certain amount of *exit current* through these openings, and the result of this will be to prevent "draughts," or the entrance of the air from without.

The heated and impure air will, doubtless, in all cases, even in those in which a continued *circulation*—in the true sense of the term—is ensured, have a tendency to ascend, and thus a slight accumulation of impurity, as in other cases, occurs towards the top, and hence the advisability, perhaps, of having a few small openings in the roof, but, at the same time, particular care must be taken that these are not arranged so as to cause an upward draught, or left too large so as to allow too free an exit for the air at this point; and if these indications prove in any case difficult of attainment, it will be better to have one large opening with a valve, which can be kept *shut* during the time the air is being forced into the apartment, and opened afterwards; and it must, of course, be borne in mind, that if the lower or inhabited portions of any room or chamber be thoroughly well ventilated, the existence of a little impurity above will not be of any consequence, and even that will be in a very diluted state.

The whole question of the ventilation of a building in which a number of human beings are congregated, must, I believe, resolve itself, in a given climate, into a balancing between certain difficulties, for, as I have already shown, any system proposed can be only relatively, not actually, perfect. Suppose, for a moment, that we lay aside experience, and look at the thing through the light afforded by one or two scientific facts.

The elements for the calculation are these. In a given chamber, filled with people, the particles of the air which come into contact with their bodies become heated, have thus their specific gravity lessened, and, consequently, ascend, carrying with them also the greater proportion of the products of respiration and other gaseous impurities. Here we say, perhaps, that Nature herself indicates the method to be adopted. What has to be done in ventilating a building is evidently to have openings in the roof, and the chief point is accomplished.

But having thus readily disposed of the upper impure air, an equally essential consideration, viz., the supply of fresh, has to be attended to. We have got rid, we shall suppose, of the impure air above, (although even that depends upon the supply of cooler air to those below, for otherwise, the temperature all over soon becomes equalized, the ascent of the impure air now ceases, and before long the atmosphere becomes intolerably stagnant, for the removal of the products of respiration, &c., arises now from the slow process of interstitial diffusion), but we have now to secure the entrance of a sufficient quantity of fresh; and now comes the difficulty, for not only is it possible, as every one knows, to do an immense deal of harm by the direct action of currents of air, but also, that by one system or mode of application alone is it practicable to insure, by means of exit shafts at the top, a requisite supply of fresh air to even a majority of the occupants. The only possible mode of carrying this into effect is to have a perforated floor, through which the air is passed to be again drawn off by a shaft, or shafts, above, and as before-mentioned, this in practice has proved a failure, for to say nothing of the dust which must infallibly be raised the effect of a current, even, of heated air directed against the feet of the unfortunate sitters, could only be to produce one result.

I hold, then, that, practically, any system for the ventilation of a large building, by means of draught-shafts must fail, and, that, that only will be really efficient which ensures a thorough circulation of the air after its admission.

The *physiological* objection to such a system, viz., that it pumps out the air, and thus tends to diminish in a given time the bulk of that essential fluid which is required for carrying on the purifying functions of the lungs and skin, is correct in theory, but, in the case of such an extremely subtle substance as the air, which rushes with extreme readiness from all quarters on the slightest attempt to produce a vacuum, in practice must prove of an extremely fractional description.

To sum up, then—the indications to be fulfilled, by as perfect a system of the ventilation as it is practically possible to have, I conceive to be the following: in the first place the air should be purified; and it ought to be of the proper temperature, and neither too dry nor too moist: and in the second, it must be delivered into a given building, and diffused or circulated so that the individuals within shall be constantly, but insensibly, receiving supplies of fresh air in requisite quantity, and that this should be effected in such a manner as to avoid draughts, and prevent also, as far as possible, the entrance of the unpurified, or malarious air, from without. The first of these conditions can, I believe, be ensured by the means already detailed, and it now only remains to treat of the second.

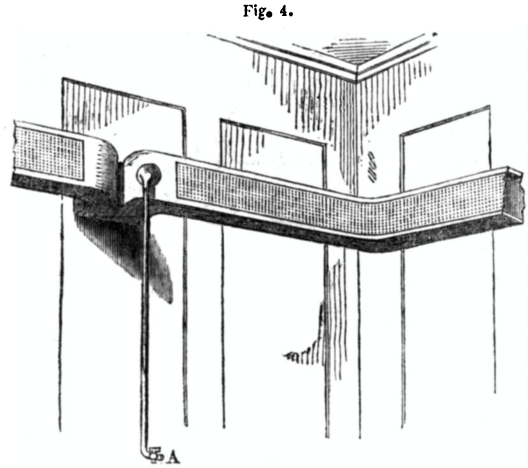
I shall assume that the fan, or supplying agent adopted, is capable of furnishing the required volume of air, and at once pass on to the question of its diffusion. In order to effect this, I have adopted the following arrangement. The air, after passing through the filter, &c., is conducted, by means of a large tube, into the adjoining apartment, at a height of about eight feet from the floor.

This tube, immediately on entering the chamber, bifurcates or divides into two branches, which pass round the room at the same level, and ultimately unite at the opposite side, thus forming, as it were, a loop, composed of tubing, of which Fig. 4 endeavours to represent a portion— the small tube A, as elsewhere mentioned, being employed for demonstrating the purity of the air after its passage through the filter.

This tube, or "air diffuser," may be of very simple materials. In the present experiment it is constructed of light zinc, and attached to the wall in a temporary manner by means of a few nails. It is of a square form, four inches in depth from before backwards, and six inches in breadth in the vertical direction. The front of the tube, as attempted to be shown in the figure, is composed of a tolerably close-textured canvass, and it presents an air-

delivering surface of 35 square feet, the length of the tubing being 70 feet. Immediately at the entrance-point for the air, and extending for a little way, the front of the tube is completed by means of metal—not canvass—in order to ensure more completely the division of the current, and to prevent an unequal or extra amount being delivered at this part. The result of the whole of the arrangement is, that the air, on being forced by means of the fan into this delivering tube, is caused to pass from

Fig. 4.



all sides through the pores or meshes of the canvass, and it thus becomes constantly and insensibly diffused in every direction throughout the room. In this manner—returning to a former illustration—we get our large entering current of air broken into almost an infinity of jets, which are constantly being passed from *all sides* into the apartment, and not only so, but also being made to enter at *varying angles*, so as to insure, as formerly explained, the establishment of a series of revolving currents, which, in their progress, shall pass into every corner, and leave no part unventilated. The angles at which these minute jets or currents pass through the canvass, can be readily demonstrated by means of down or light feathers, or by the flame of a taper, but for the sake of convenience, and in order to avoid accident, in the experiments actually made the former method was adopted. In the first place, the fact that the air during the action of the fan did pass through at every part of the canvass was ascertained, and the direction of the currents then established. The angles at which these entered the apartment were found to vary at different parts, that of the side ones being, as might have been expected, by far the most acute; in fact, the only part where a *direct* current existed at all, was found to be on the side opposite to the main entrance. Of course, if the canvass were very close in texture, and the amount of air urged insufficient to cause some pressure within the tube, the result would be that these currents would pass more directly from the sides and for a greater distance towards the centre of the room, but the effect produced would ultimately come to be the same. With regard to the amount of air delivered from the different sides under ordinary circumstances, or those in which the air is not made to pass through under particular pressure; as was to be anticipated, the largest quantity passes through the canvass towards, and at, the point where the two currents meet, opposite the main entrance, and the least at the sides; and this leads to the practical suggestion of having the canvass at the latter parts, viz., the sides, of a coarser description than at the others, as by this means the amount of air delivered from all quarters will become equalised. This indicates also another advantage, which the canvass more readily affords than any other material, such as perforated zinc, &c., viz., that when in a given chamber more or less air, from its shape or other circumstances, is required at one part than at another, this can, in the same manner, be readily delivered by using a wider-meshed canvass at those parts, and *vice versa*. In the same way, also, the adoption of the canvass secures another convenience, as it prevents the necessity, within certain limits, for increasing the size of the tube, or air-diffuser; for one, even, of very moderate size, by employing very coarse canvass, can be made to deliver almost any amount of air, and on the other hand, if a small amount only be required, canvass of finer texture can be used, and so on; and in addition to these advantages, the cheapness of this material is, of course, a recommendation.

With regard to the position of the "air-diffuser" above the floor: this must also, to some extent, be adapted according to circumstances, such as the height and breadth of a chamber, &c. In some special cases, even more than one tube may be required, and of course in all public buildings with galleries, a separate diffuser, coming off from the main one, will have to be adapted for the ventilation of these. As a rule, I am inclined to think that ordinarily six to eight feet from the floor, or from two to four above the heads of the sitters, will prove in the great majority of cases about the proper distance, and the same height will probably answer for hospitals, although the relative distance between the entrance of the air and the individuals will be somewhat increased from the recumbent position in the case of the patients. The rule in the first place is to avoid the *direct* current of the air, and this at once establishes the position of the diffuser *above* the heads of the occupants, and in the second, at the same time, to have the tube so placed as to secure, consistently with safety, full effect from the circulation of the air which is constantly going on. I have already shown that the air in an apartment with an arrangement of the above description *must* be in constant movement, and the object is to hit as near as practicable to that point when its action becomes insensible, and, at the same time full benefit from its diffusion at the proper level secured. If care be taken not to place the "diffuser" *too low*, the height then comes to be of less importance, as, from the absence of special openings of any size above, the general movement of the air, as was formerly explained, must be downwards, as the exit points are all below, and as it is presumed to be passing in in considerable quantities, it has no resource but to seek a way out through these.

There are some people who would prefer, as far as their feelings are concerned, to remain almost constantly in a "draught," but, in considering various sanitary arrangements, reference can only be had to such as will secure the greatest amount of benefit to the majority, and certainly under our climate in this country such instances as the above are comparatively rare.

From what has been said it will be evident also that the distance of the "diffuser" above the heads of the occupants will have to be regulated according to the amount of force employed, for if a large volume of air be driven into an apartment with considerable force, it is clear that the tube will require to be placed considerably higher up than it would under more moderate circumstances. It is impossible, therefore, to lay down the exact position of the "air diffuser;"—all that can here be done is to indicate a few of the elements involved in the calculation.

Utility is, in all cases, a main consideration; and, although it is often difficult to combine the "useful with the ornamental," care ought at least to be taken to avoid causing a disfigurement; and as these "diffusers," as attached in the present experiment have, perhaps, somewhat that effect, I should recommend that, in practice, they be embedded in the walls, at the proper height, and this could be readily done—especially during the construction of new buildings; and in such cases the necessity for even a tube of metal, or other material, could be obviated by simply leaving a plastered cavity, of the requisite size, all round, with edges of wood disposed for the convenient attachment of the canvass, which, when an

object, could be dyed of various colours, such as red, green, &c. Other steps could, of course, likewise be taken to render such arrangements actually ornamental, and this is by no means an unimportant consideration, for health itself is not unfrequently sacrificed when this cannot be secured.

I may here mention that, although of course the plan here proposed may be applied anywhere, it is for public buildings, or those in which a number of persons are collected, that it is chiefly applicable, for, as I have already attempted to show, *by no other system is it practically possible* to secure, in such cases, even an approach to thorough ventilation.

With regard to the application of the foregoing method to buildings in India: the general rules already laid down can be applied, and under certain conditions, as in malarious districts, where the purity of the air within, and the exclusion of the unpurified without, come to be objects of vital importance, the system—including, of course, the charcoal filter, &c., here recommended, ought to receive a fair trial.

We know the invaluable power of charcoal over putrid elements of decomposition, which, in themselves, prove most hurtful to human life, but we are, as yet, ignorant of what its influence may be when dealing with those more special poisons which give rise to diseases like ague, or intermittent fever, but some facts and analogies, into which I have not here time to enter, would lead us to believe that, probably, it may have some power over even these.

To set this point at rest, one way or another, I would propose that a certain barrack, in *at least* one of our fever-stricken districts in India, be fitted up in the manner here indicated, and the results, at the termination of a reasonable period, carefully balanced. The expenses involved in carrying out such an experiment would be comparatively trifling, and would be more than repaid, were the lives of only half-a-dozen of those expensive items—European soldiers—to be saved in the course of as many years.

This subject, then, as bearing on the health of the resident in all unhealthy districts in India, I consider of vast importance, and, as affecting the welfare of the soldier there, and the expenses of the Government, one which calls for attention from the Indian authorities.

So much, then, for the subject of the purification and diffusion of the air in public buildings, &c.

The next application of charcoal as a sanitary agent which I would mention, is one by which it is brought to bear upon each individual separately. This is effected by means of a respirator, or, more strictly speaking, a filter for the *inspired* air, and it must not be confounded with any other respirator, as the entire object of this instrument is to *purify* (not to warm) the air. The objects accomplished by it are the following. All the inspired air, or that which enters the lungs, is made to pass through a layer of small angular fragments of carefully prepared charcoal, fully an inch in thickness; and, on the other hand, all the expired air, or impure breath, is allowed to pass freely out by a separate passage, and in this way its after contact with the charcoal entirely prevented. This is effected by means of valves of a very durable description, but which act with great freedom. The arrangement of these will be readily understood by referring to Fig. 5, which shows a section of the instrument,—Fig 6 being an attempt at a general view.

In Fig. 5, C represents the upper or expiratory valve, B the lower or inspiratory one, through which the purified air passes. Both valves are shown open in the figure, and the arrows indicate the directions of the currents, but in practice C of course shuts while B opens, and *vice versâ*, and from the sloping of the seat of the valves their tendency under all ordinary positions of the body is to remain shut until called into action.

Fig. 5.

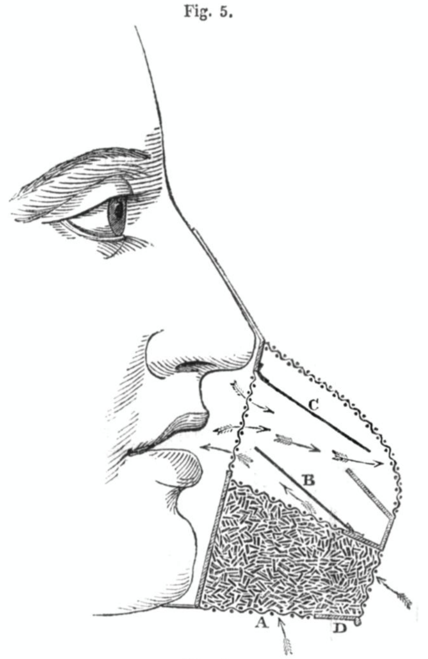
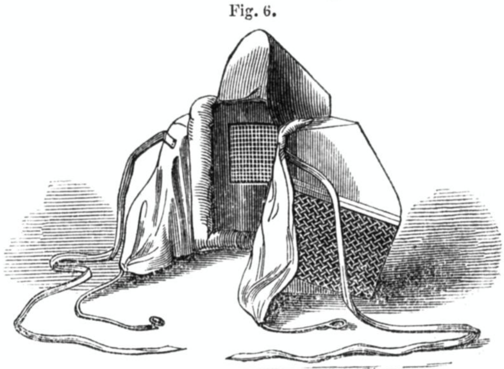


Fig. 6.



Mr. Rooff, of Willow-walk, Kentish-town, is the manufacturer of these respirators, as well as of the old form first brought out by Dr. Stenhouse. Some years ago Mr. Rooff took out a patent for the application of valves to such instruments, and under my directions he has been successful in applying these so as very effectually to accomplish the foregoing objects, and thus to render the instrument as far as possible effective. The application of the valves of course obviates the objections to the old form of the charcoal respirator, in which the *expired* as well as the inspired air has to pass through the charcoal, thus rendering that impure which it is an object of importance to retain as long as possible intact, for in the case of a respirator, only a small quantity of charcoal can conveniently be employed. The other objection to this form, and one which I at once saw would prove fatal to its employment in warm climates, is that it tends, like all the common forms of air-warming respirators, slightly to impede respiration, by opposing somewhat the exit of the breath, an objection which the introduction of the upper valve, C, has entirely removed. For some purposes, however, the old form of the charcoal respirator will be found of advantage, as, for example, in instances in which a *mechanical* filter, as well as one calculated to destroy a certain amount of gaseous impurity, is a desideratum, as in the case of needle-grinders, firemen, painters, &c., and in "London fogs" I can myself strongly recommend it.

The new, or valved charcoal respirator, from the nature of the materials of which it is constructed—wire—thin tinned iron, and charcoal, with the requisite padding, is very light, but it appears somewhat bulky. Its object is, however, to prevent, as far as practicable by such means, the introduction of the elements of disease into the system, and hence *efficiency* has in this instance been the chief consideration.

The action of the instrument while being worn is so easy, that I have myself slept with one on during a warm close night without inconvenience—a thing of very great moment, for it is during sleep that the body is most easily influenced by the floating elements of disease.

These, then—the "air-filter" and the respirator—are two definite methods by which, as directly affecting individuals, charcoal can be brought to bear on the purification of the air, but there are an immense number of simpler applications of this substance, into which however I shall only very shortly enter.

If charcoal be placed so as to present a considerable surface to the currents of air, which are to a greater or less degree constantly passing through every chamber, these become deprived, to a very considerable extent, of a certain amount of impurity. This is readily accomplished by having flattened-shaped cages, or baskets, constructed, and filled with angular fragments of wood-charcoal, about the size of common beans. These cages ought to be from one-and-a-half to three feet in extent either way, and from two to three inches in thickness. They may be made of stout-wire gauze, set in wooden frames, or extemporised of various other materials, such as small canes, narrow slips of wood, &c.

These charcoal protectors must, in all cases, be applied so as most readily to allow the air, during its circulation, to come into contact with them, and they ought to present a considerable surface, as well as bulk; for it will not do to place a few handfuls of charcoal in the most out-of-the-way corners of an apartment, as is sometimes done, under, apparently, the expectation that all impurities will be drawn thitherwards by some magically attractive power! Like every other thing, charcoal, to be effective, must be put under *reasonable* conditions.

Other methods than those here mentioned can, of course, be adopted, by which charcoal may be employed for the purification of the atmosphere in a room, but, perhaps, sufficient has been said to indicate the general principles by the application of which these are to be carried out.

Undoubtedly, however, the most important of all the indications to be fulfilled by the use of this substance, is, the *prevention* of the various deadly products of decomposition from ever reaching, as such, the surface at all; and its employments for this purpose may be shortly summed up. It ought to be used for covering exposed filth of every description; and dead bodies, under many circumstances, should be buried with a layer of about three inches of pounded charcoal over them; and for this purpose, that from peat, when it can be procured more cheaply than the wood variety, may be used, although its absorptive power is not quite so great as that of the latter.

For some purposes, peat charcoal answers remarkably well, but in others, that from wood will be found preferable. Its power is somewhat greater than that of the former; it is less readily damaged by exposure to wet or moisture, and, with ordinary care, does not cause annoyance from *dust*—a thing which it is very difficult to avoid when employing the peat charcoal, on account of its friability. As a rule, therefore, I should recommend that wood charcoal be used within buildings, and that from peat, chiefly employed for out-door purposes.

With regard to burying dead bodies with quick-lime: its advantages have never, as far as I am aware, been clearly proved; but, be this as it may, the following experiment, which was lately brought to my notice, will show that it is not for a moment to be compared with charcoal. Two horses were taken and buried, not far from each other, in a similar soil—a thing to be attended to in such an experiment, as a porous soil, (from the *air*, and, consequently, oxygen, contained in its interstices,) tends to hasten decomposition in the same way as charcoal does. One animal was covered with quick-lime, the other with charcoal. At the termination of a certain period both graves were examined. In the course of opening the one with the lime, the workmen were obliged to desist, on account of the intolerable fœtor emitted. On opening the other one, however, the operator was surprised to find that, with the exception of the bones and portions of the skin, the animal had entirely disappeared, and thus is afforded a very striking demonstration of the relative power of the two substances.

So much, then, for the employment of charcoal as a sanitary agent. In dealing with this subject I have chiefly endeavoured to indicate the *principles* which ought to be kept in view in bringing its powers to bear, and I have also done my best not to assume more than what at present is capable of proof. Charcoal may or may not be a disinfectant in the true sense of the word—it may or may not prove a safeguard from special diseases which are caused by elements of the constitution of which we are at present ignorant—but this we do know, that it has the property to a wonderful extent of destroying those putrid and deadly gases which too often—in the cottage on the hill side, as well in the crowded city—are allowed to impregnate the atmosphere, and which, in reality, constitute far deadlier, because more insidious, enemies than those more striking diseases such as cholera, which would almost seem to be, in kindness, sent to point with warning finger to those preventive measures which never can, with impunity, be relaxed.

WANDSWORTH TRADE SCHOOL.

A report has just been issued of the proceedings of an experimental Trade School, lately founded at Wandsworth by the Rev. Dr. Booth, F.R.S., Chairman of Council of the Society of Arts, which has excited much curiosity amongst those interested in new educational schemes. The object of the present school is to provide instruction for the children of artisans and small tradesmen in the knowledge of common things, that may be turned to practical usefulness in after life. By the payment of eightpence or a shilling a week, children are taught a little of mechanics and chemistry, and the use of the steam engine, along with geography, history, and arithmetic, and their bearings in relation to trade. The school during its first quarter had an average attendance of about twenty-six boys, but owing to the incompetency of the master first selected, the number had considerably fallen. A new master was then chosen, Mr. Robert Marks, late a pupil of the Highbury Training College, and the holder of a first-class certificate from the Committee of the Privy Council on Education, and with the assistance of Mr. Buckmaster, of the Government School of Mines, and an able drawing master, Mr. Lauchenik, considerable improvement has taken place, and the number of pupils has risen to fifty-eight. The school is attended equally by the sons of churchmen and dissenters, and the Committee of Management are extremely sanguine in the ultimate success of their experiment, concluding their report with warm expressions of the deep thankfulness they feel at the success of a school intended to provide for the educational wants of such large and influential classes as those which comprise the skilled artisans and small tradesmen of the country, classes which hitherto have been altogether overlooked in the educational movements of the last few years, whether made by the state or by private persons. They also express their very decided and deliberate opinion that it is politically unsafe thus wholly to neglect the education of such self-willed and

excitable masses. They would gladly see trade schools of this kind established throughout the country, especially in extensive manufacturing localities. If the success of this attempt has been so remarkable in a small place like Wandsworth, still greater might naturally be anticipated among a larger population.—*Literary Gazette.*

Home Correspondence.

BRITISH IRON MANUFACTURE.

Sir,—Having been personally acquainted with Mr. Richard Cort for the last twenty years, I have read with much interest his Review of the Report of the Committee of the House of Commons, in 1812, upon his late brother's petition, and his exposition of the vast benefits which the nation has derived during the last sixty-seven years from the puddling and rolling processes in iron manufacture, invented by his late father.

The columns of the *Journal of the Society of Arts* have never before made public claims upon the national gratitude so extensive and well-founded as those which Mr. Richard Cort's recent articles disclose; and I should hope that every member of the Society of Arts, as well as the ironmasters in general of the United Kingdom, will agree with me in thinking that the time has come when steps might be taken so to press those claims upon the attention of Parliament as to procure for the last surviving male representative of Mr. Henry Cort, and his two aged sisters, a suitable provision for their declining years.

Prior to the publication of these articles, it was my impression that means should be used by Mr. Cort's personal friends, amongst whom I number myself as one, to raise, by private subscription, a sum to purchase an annuity sufficient to make him independent and comfortable for life; but with the narrative before the public which your Journal contains, it would, I think, be a shame and a reproach to the country were Parliament to allow individuals to furnish from their own limited resources that which ought to be given from the public purse, not with a grudging hand, as a charitable dole, but as a long unjustly withheld, and at best most trifling and inadequate acknowledgment for services such as no other individual has ever rendered to native industry—and consequently to the prosperity, happiness, and grandeur of Great Britain.

Knowing, however, the extreme difficulty which every person labours under who knocks single-handed at the Treasury doors, let his claims on the public consideration be what they may, allow me to suggest, through your columns, that local committees should be formed without loss of time in the principal seats of the iron trade, for the purpose of aiding and assisting Mr. Cort to bring his claims effectually before the House of Commons during the course of the ensuing session; and also, that the Committee of the Society of Arts should name five or six of their number to co-operate with and act as a central head for such local Committees.

In this way effect may be given to Mr. Sanderson's wishes, that a national acknowledgment should be made to Mr. Cort on account of his father's national services; some reparation be made to the family of a man who left inventions which have proved a legacy to his country exceeding £259,000,000; and future inventors encouraged by the assurance that they shall not expend their private fortunes in prosecuting useful discoveries, and thereby leave their children destitute, without a grateful nation doing what is just, liberal, and honourable in the case.

I remain, sir, your obedient servant,

RICHARD BROUN, Bart.

Chelsea, August 6, 1855.

MR. CORT'S INVENTIONS.

Sir,—I little thought, when lately remarking, in your 135th number, on that standing disgrace to British justice and gratitude, the treatment of Mr. Cort, that a descendant of the honoured name was in existence, able to furnish you with the overwhelming details which have formed so prominent, painful, and invaluable a feature in three late numbers. When a boy, I recollect my father having some correspondence with Mr. C. Cort, perhaps forty years since. Hearing nothing further of the name through successive epochs of the redolent prosperity of the iron trade, I concluded this fearful business had merged into the class of irreparable wrongs, which remain unadjusted until the books are opened in judgment upon oppressors and extortioners. I supposed that any possibility of compensation was as effectually precluded as the repair of Dudley's bellows and furnaces, cut and destroyed by rivals in trade and owners of forests, jealous of the introduction of pit coal to the first stage of ironmaking, and which Cort has introduced to the last stage, —inventors to be ranked together as similar in achievements and in fate. The disorders of civil war afforded some excuse for the usage of Dudley; in truth his inventions were comparatively valueless until Cort set the crowning stone on the performance; his difficulties are more an instance of indomitable energy struggling with adverse events—the malice of rivals, and vested interests in comparatively lawless and unsettled times, than the exhibition of an enormous aggregate of national and official apathy towards individual oppression. The nation or the Government made immediately no great gain by Dudley's loss, but the whole circumstances of Mr. Cort's affair, in a time of internal peace and order, by the Government of a boastfully free state, and unvindicated by the committee of a representative legislature, offer facts which can only meet a parallel in the annals of the most rapacious despotism. That the whole blaze of the prosperity of the world, wealth to the amount of thousands of millions sterling, has been created, within little more than half a century, by the inventions of one single man; that he was deliberately and perseveringly hindered from reaping any other reward but loss from his labours by the acts of official authority, in no barbarous times, but within the memory of living men; and that these injuries, so artfully aided by designing men, hoodwinked or bewildered a Committee of the House of Commons, presided over by a future president of the Royal Society, into a report upon the circumstances so utterly absurd and false, that the famous resolution of the whole house passed about the same period, that the guinea, for which every man fortunate enough to have one, could obtain in open market seven silver shillings and a pound bank-note, was absolutely of the same value as one shilling and the note alone, may be considered as the dictum of a profound oracle compared with that report; these are the facts now brought before the country by the papers of Mr. Richard Cort, that deeply-injured man's surviving son. The House of Commons is supposed by some to be a degenerate body, and its modern votes lightly spoken of, but these *laudatores temporis acti* will find their best correction in referring to this narrative. The oppressive cruelty of state officers was slurred over by a report, not only untrue, but adding insult to the injuries of the petitioner for redress, purchased at a cost of £250, which the whole House had not the justice to follow the recommendation of even that unjust committee to repay.

That the *whole share* of the merit of the puddling process and the invention of grooved rollers was due to Mr. Cort alone, in contradiction to the unhappily false verdict of the committee, all ironmasters know; no other name is ever mentioned amongst them as the author of these transcendent national gifts, and no person reading the details and documents in Mr. Richard Cort's papers, can entertain the least doubt on the subject. The report of the committee is doubly unjust, for if they obtained evidence that others had a greater share in these great

things, it was a treachery to merit to conceal the names of the right inventors. But they had no such evidence, a random assertion is made, *de non existentibus*, and *the evidence suppressed is that which justifies the claim of the petitioner before them.* Wrong, grievous wrong, had been done, and the wrong-doers found means to confirm that wrong, and throw in a compassionate sneer, the better to interpose between the truth and their punishment. An action for damages against the Crown was in those days deemed an attempt as insane as to use the head for a mural battery, or there could hardly be a clearer case. The property of Mr. Cort was seized for the official default of his partner; not only were the works seized and destroyed, where he had brought his processes to perfection, but the patents also, with the contracts with various firms for their use. These contracts were not enforced, and the defalcation thereby refunded to the public purse, but the contracting parties were suffered to make and sell their iron in peace, freely using the new process, and pocketing the extra profit of the royalty contracted for. A creditor has no legal right to more of his debtor's property than will cover his claim, and surely Mr. Cort might have equitably recovered from the crown the £160,000, or whatever the balance was, which would have remained out of the £187,000 which the patents would have realised during the term when these just public servants kept them folded in a napkin. To avoid such a dilemma it appears to have been convenient to place Mr. Cort in a cleft stick, granting him £200 a year in lieu of his just rights, a certainty, however small, which of course would have been taken away had he ventured to move to regain the tens of thousands owing him. The whole transaction is so bad that we are warranted in conceiving that where there was dishonesty and cruelty, there was also corruption, and that the authorities who suffered the ironmasters to evade the contracts due to the holders of the patents, found convenient reasons for a clemency to them, so foreign from their mercies to the inventor. A far more comprehensive and efficient method for reaping where another sowed was arranged than the vulgar Luddite practices under which Dudley suffered. It was no doubt a master-stroke to demolish the inventor in the moment when he had fully taught his art. The hive was full of honey, it was time it should be plundered and destroyed. It would be an interesting addition to the matter already given, to know the names of the firms who principally supplied the government stores during the years the patents were wrongfully held in abeyance. In a future letter I propose to offer some remarks on the practical details set forth in the notable report of this committee. The estimate of Mr. Richard Cort, that the aggregate national savings by his father's processes to this date, are near 260 millions sterling, *I believe to be very far from exaggerated.* In writing to a friend immediately after reading his second paper, I stated these savings at a rough calculation as at least 300 millions; but if we consider the amount of actual value which has been called into existence throughout the world by these inventions; the iron manufacture of the United States and of the Continent, which are equally with ourselves indebted to *him* for its present development; the extension of the steam engine both at sea and on land, which, without a quantitative process for supplying well-finished iron, would have been as nothing; the present almost universal application of the metal, including *iron ships* and *iron ways*, with all the wealth collaterally springing from these sources, the mind altogether fails in contemplating the magnitude of the results proceeding from one individual.

I am, sir,
Your obedient servant,
DAVID MUSHET.

August 13th, 1855.

THE VINEGAR PLANT.

Sir,—There is a plant called the Vinegar Plant,—a kind of fungus, growing on the surface of mothery vinegar, and which is, I understand, sold in Manchester by the chemists for the purpose of converting sugar and water into vinegar. Can any of your correspondents give us the history and particulars of it, "both parentage and education, life, character, and behaviour," and how it came to be first known and used? It appears to be the yeast of vinegar.

I am, Sir,
F.S.A.

August 13, 1855.

LONG RANGE GUNS.

Sir,—If I mistake not, one of Sir Samuel Bentham's plans in gunnery was to place a large gun in a steam-boat, length long, and aim it by means of the rudder power.

There can be no doubt of the efficacy of this plan, and as little of the preferableness of large artillery to small.

The perfect gun requires a length proportional to the diameter of the bore. The exact proportions are not yet ascertained, but one thing is very clear, the proportion of length in small arms very far exceeds that of modern great guns.

And the proper *expansive* expenditure of the powder requires a given length of bore to follow up the projectile without wasting the force on the atmosphere curling round the mouth of the gun.

The projectile should be elongated to the greatest possible extent, to reduce the sectional area of resistance against the atmosphere.

An elastic piston or wad should take off the shock of the powder on the projectile, causing pressure instead of a blow.

The gun should be breech-loading, and the interior polished, and free from all rust.

The heavier the gun, the more perfect will be the expenditure of the force on the projectile, and the less the recoil.

If the gun be of cast metal, there does not seem to be any difficulty as to weight of material.

The gun could be fixed on a platform elastically supported to absorb all shock, with a mere vibratory amount of recoil.

It would not require to be swivelled or trunnioned. The steam power and the rudder could perfectly adjust it to the aim by longitudinal or lateral movement on the water.

A gun of twelve inches bore would require to have, in cast iron, an external diameter of at least four feet at the breech, and a length of thirty feet. Such a gun would weigh about sixty tons, and it would require a wrought tubular lining.

Placed at an angle of ten degrees with the horizon, such a gun would have a range of about six miles, throwing with accuracy an explosive elongated projectile four to five feet in length, which, pitching vertically in a town or fort, would explode horizontally, and not upwards at an angle of 45 degrees, as is the case with spherical shells.

A gun of this class could be constructed without difficulty, and the effect tried at sea along the coast.

And it is obvious that projectiles from such a gun might be discharged into a fort, every one hitting an efficient mark, while a similar gun in the fort would not strike, save casually, the vessel, because the error of a few yards at the fort would not signify, but a few yards error at the vessel would cause a simple plunge in the water, extinguishing the projectile.

The practice of moving guns in order to manipulate them, has hitherto kept down weight. Let them become fixtures, and the vessel become, as it were, a stock to the barrel, and this difficulty will be obviated. And when we have accomplished the greatest possible range with a twelve-inch bore, it will be time enough to try a larger calibre.

I am, Sir, yours,
PROJECTOR.

August 17, 1855.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Delivered on 9th August, 1855.

Par No.
159. West Indies—Copy of Correspondence.
409. Arctic Expedition—Report from Committee.
437. Valuation (Ireland)—Return.
282. Bills—Nuisances Removal, &c., and Police of Towns (Scotland).
289. Bills—Judicial Procedure and Securities for Debts (Scotland).
296. Bills—Charitable Trusts (Amended).
297. Bills—Metropolis Local Management (as Amended by the Lords).
Marriages in Ireland—Report of the Registrar-General.
Borneo (Sir James Brooke)—Reports of the Commissioners.
Public General Acts—Cap. 59, 60, 61, 62, 63, 64, 65, 66, 67, and 68.

Delivered on 10th August, 1855.

416. Towns Improvement Act (Ireland)—Return.
428. Medical Officers (Army and Navy)—Abstract of Return.
440. Post-Office—Accounts.
454. Malt—Return.
457. Crown Lands (Scotland)—Return.
459. British and French Fishing Vessels—Return.
Mercantile Laws, and the Law of Partnership—2nd Report from the Commissioners.

Delivered on 11th August, 1855.

425. Chamber of London—Annual Accounts.
430. Revenue, &c., (Ireland)—Accounts.
455 East India (Annexation of Karouly)—Return.
Australia (Discovery of Gold)—Further Papers.
General Board of Health (The Cholera Epidemic of 1854)—Report.
Noxious Trades and Occupations (France)—Report by Dr. Waller Lewis.

Delivered on 14th August, 1855.

464. Emigration (North America)—Copies or Extracts of Despatches.

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette August 10th, 1855.]

Dated 11th July, 1855.

1552. T. W. G. Freeby, 1, Westbourne-terrace Villa—Revolving fire-arm and cannon.

Dated 20th July, 1855.

1641. A. White, Great Missenden—Swinging beds and covers for sleeping off ground.
1643. J. H. Johnson, 47, Lincoln's-inn-fields—Railway axles. (A communication.)
1647. E. F. Lefebvre, Orleans—Motive power.

Dated 21st July, 1855.

1649. P. A. le Comte de Fontaine Moreau, Paris—Voltaic batteries. (A communication.)
1651. G. H. Perry, Wolverhampton—Provision cases. (A communication.)
1653. E. Myers, Rotherham—Buffer and carriage springs.
1655. S. J. Pittar, 10, Lisle-street, Leicester-square—Bridges. (Partly a communication.)
1657. J. W. C. Wren, Tottenham-court-road—Folding perambulator.
1659. G. Hepplewhite, Grovesnor-street, Commercial-road East—Spare rudders for ships.

Dated 23rd July, 1855.

1661. T. H. H. Kelk, Orgathorpe, near Loughborough—Materials for paper, textile fabrics, and cordage or ropes.
1667. C. Goodyear, 25, Avenue-road, St. John's-wood—Boats.
1669. G. H. Rollet, Liverpool—Projectiles.

Dated 24th July, 1855.

1670. W. G. Craig, Gorton, near Manchester—Consuming smoke.
1671. L. A. Ritterbandt, M.D., Warwick-street, Regent-street, and J. Bower, Hunslet, near Leeds—Manure.
1672. L. Bradley, Richmond—Reaping machines.
1673. J. Westwood and R. Baillie, Poplar—Preserving timber-built ships.
1674. H. Stent, Birmingham—Apparatus for measuring gas, &c.
1675. S. Twist, Birmingham—Producing ornamental devices on glass.
1676. B. Wood, Caledonian-road—Colouring matter for ink, artists' colours, &c.
1677. J. H. Johnson, 47, Lincoln's-inn-fields—Breech-loading and self-capping fire-arms. (A communication.)
1678. J. H. Johnson, 47, Lincoln's-inn-fields—Breech-loading ordnance and fire-arms, and projectiles. (A communication.)
1679. S. E. Steane, Oxford—Application of perfumery to articles of domestic use.
1680. R. H. Brooman, 166, Fleet-street—Pipes and tubes. (A communication.)
1681. T. Petitjean, Tottenham-court-road—Silvering, gilding, and platinizing glass.
1682. T. Hewitt, Morley-park-works, near Derby—Pumps.
1683. R. P. Huthnance, Chipping Norton—Drying.
1684. B. Baily, Leicester—Knitted fabrics.
1685. G. T. Bousfield, 8, Sussex-place, Loughborough-road—Cutting wood. (A communication).
1686. C. Goodyear, 25, Avenue-road, St. John's-wood—Carriages.
1687. J. B. M. Potin and A. G. N. Lingee, Paris—Composition for coating substances.

Dated 25th July, 1855.

1688. E. S. Tucker, Kentish-town—Busk and hook for stays.
1689. J. Girard, Paris—Rotary engines.
1690. V. Scully and B. J. Heywood, Dublin—Vessels for containing fluids.
1691. W. Weallens and G. A. Crow, Newcastle—Steam-engines.

Dated 26th July, 1855.

1692. D. Davies, Stockport—Boiler for heating buildings with hot water.
1694. T. M. Hall, Preston—Chimneys, particularly of locomotive and marine engines.
1696. J. Gedge, 4, Wellington-street South—Pumps. (A communication.)
1698. T. A. Poncelin, Paris—Preparing coffee.
1700. R. H. Hancock, 18, West street, Smithfield—Stopping ordinary trains.
1702. T. Dawson, King's Arms Yard—Bedsteads, couches, &c.
1704. C. Goodyear, Avenue-road, St. John's-wood—Carpet and other bags. (Partly a communication.)

Dated 27th July, 1855.

1706. Captain W. Allen, R.N., Athenæum Club—Vehicle for transport of camp baggage.
1708. J. A. Benfield, Rotherhithe—Propelling vessels.
1710. W. Bridgewater, Cheltenham—Tiles.
1712. J. and R. K. Whitehead, jun., Elton, near Bury—Textile fabrics.
1714. G. Woods, 60, Crown-street, Finsbury-square—Pack saddles.

Dated 28th July, 1855.

1716. R. H. Abraham, 11, Howard-street, Strand—Carriage on two wheels, to be called a "Rotalter."
1718. F. G. H., and A. J. Levasseur, Paris—Oil lamps.
1720. R. Wilson, Glasgow—Finishing woven fabrics.
1722. J. Kerr, Bedford-terrace, Trinity-square—Revolver fire arms.
1724. T. B. Daft, Isle of Man—Inkstands.

Dated 30th July, 1855.

1726. J. Peacock and H. H. Barry, Bedford-street, Strand—Making copies of writings simultaneously with originals.
1728. C. Piper, Cambridge—Gun stocks.
1730. W. Truran, Marazion, Cornwall—Smelting.
1732. J. Hanson, Dough, Belfast—Digging potatoes.

Dated 31st July, 1855.

1734. H. Mackworth, Clifton—Washing and separating minerals, &c.
1736. H. Colby, New York—Altimeter or self-adjusting quadrant.
1738. L. N. Dupont, Louviers Town—Fabric called "drap de soie."

Dated 1st August, 1855.

1742. R. A. Brooman, 166, Fleet-street—Paper, pasteboard, and pulp. (A communication.)
1744. C., W. J., and R. Vaughan, Birmingham—Handles of iron bowls and other iron vessels.
1746. L. Glukman, Dublin—Box for papers, &c.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

1739. J. Robert, Liege—Machinery for manufacturing fire-arms.—1st August, 1855.
1740. B. Britten, Anerley—Projectiles.—1st August, 1855.
1754. W. Meyerstein, 47, Friday-street—Sewing machine.—3rd August, 1855.
1770. A. Warren, 11, New Broad-street—Coating or combing sheet iron and steel with sheet lead, zinc, tin, copper, or alloys of such metals.—4th August, 1855.

[From Gazette August 17th, 1855.]

Dated 2nd August, 1855.

1748. J. Stanley, 224, Whitechapel-road—Weighing machines acting upon levers, steelyards, &c.
1750. S. Waller and J. Butterfield, Bradford—Machinery for weaving figured fabrics.
1752. R. A. Tilghman, Philadelphia—Candles.

Dated 3rd August, 1855.

1756. J. Lane, Birmingham—Gold leaf.
1758. J. B. Mourguet, Paris—Destruction of weevil whilst drying corn.
1760. F. R. A. Glover, M.A., Endell-street—Carrying knapsacks, &c.
1762. R. A. Tilghman, Philadelphia—Alkalies and alkaline earths.
1766. J. H. Johnson, 47, Lincoln's-inn-fields—Separating carbonic oxide from gas, and application to heating purposes. (A communication.)
1768. J. H. Johnson, 47, Lincoln's-inn-fields—Material for ornamenting various articles. (A communication.)

Dated 4th August, 1855.

1772. J. Anderson, Edinburgh—Shirts.

Dated 5th August, 1855.

1778. H. Gilbee, 4, South-street, Finsbury—Flat-bottomed boats. (A communication.)
1780. J. Platt, Oldham, and J. Hibbert, Ashton-under-Lyne—Mules for spinning and doubling.
1782. J. Lilley, Birkenhead—Textile fibres, and manufacture of pulp and dye.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

1798. C. F. Thomas, Massachusetts—Boilers for steam carriages.—8th August, 1855.
1803. A. Webster, Vermont, U.S.—Machinery by which a horse may be suddenly disengaged from a carriage while running away with the same, or whenever required to be detached from it quickly. (Partly a communication.)—9th August, 1855.

WEEKLY LIST OF PATENTS SEALED.

Sealed August 7th, 1855.

555. James Murdoch Napier, York-road, Lambeth—Improvements in the furnaces used in the manufacture of soda or alkali.
601. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in steam engines. (A communication.)
781. David Cope, Birmingham—Improvements in the manufacture of metallic spoons, forks, and ladles.
1225. Etienne Jules Lafond, and Count Louis Alfred de Chatauvillard, Belleville, near Paris—Improvements in the processes of and apparatus for treating mineral, animal, and vegetable matters for obtaining oils, essences, paraffine, and other similar materials.
1315. John Sutton Nettlefold, Edward John Nettlefold, and Joseph Henry Nettlefold, Holborn—Improvements in locks.

Sealed August 10th, 1855.

326. Robert Kerr, 41, Coleman-street—Improvements in preparing loaf sugar for use, and certain apparatus for the same.
344. John Mason and Samuel Thornton, Rochdale, and Thomas Spencer Sawyer, Longsight—Improvements in finishing or polishing and drying yarns or threads.
345. Henry Spencer, Rochdale—Improvements in machinery for preparing and spinning cotton and other fibrous substances.
371. Henry Schottlander, Paris—Improvements in ornamenting looking glasses.
404. John Edmund Gardner, Strand—Improvements in portable cooking apparatus and in cooking lamps.
420. Alexander Brown, Tarbet, Dumbarton, N.B.—Improvements in the manufacture of paper, and in the production of textile materials.
547. Joseph Malcomson and Robert Shaw, Portlaw, Waterford, and William Horn, Mark-lane—Improved expansion valves for steam engines.
1046. Samuel Cunliffe Lister, Bradford—Improvements in treating old ropes, also old canvas and gunny bags, and similar materials, part of which improvements are also applicable to hemp, flax, rhea, and other similar fibre, to render parts of the fibres suitable to be spun.
1195. William Simson Young, Leith—Improvements in steam boiler furnaces, and in the prevention of smoke therein.
1297. William Baines, Coverdale-terrace, Hunter's-lane, near Birmingham—Improvements in certain parts of railways, and for the methods of manufacturing and constructing part of the same.
1338. Nathan Hackney, 20, North-street, Hull—Improvement in the manufacture of earthenware, china, and porcelain.
1354. George Cottam, Winsley-street, Oxford-street—Improvements in hayracks and harness brackets.
1362. Samuel Cunliffe Lister, Manningham, Bradford—Improvements in treating silk waste, also the noils of silk wool and goats' wool or hair before being spun.
1371. George Frederick Morrell, Fleet-street—Improvement in ink bottles or ink vessels.
1393. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in furnaces or fireplaces. (A communication.)

Extension.

Sealed 10th August, 1855.

11. Frederick John Reed, 59, Friday-street, Charles Foard, Stock Exchange, and Thomas Shepperson, Dulwich-hill, Camberwell, (executors of Richard Groucock, deceased, to be held in trust for John Juckes, Henry Surmon, William Harnor, and William Craven)—Improvements in furnaces or fireplaces.

Sealed August 14th, 1855.

341. Robert Molesworth, Half-moon-street, Bishopsgate-street—Improvements in the construction of brushes.
348. Eugène Carless, Stepney—Improvements in the manufacture of paper-cloth, known as artificial leather, and in coating or covering the surface thereof with colouring matter, said colouring process being also adapted to the colouring or staining of paper.
350. William Carter Stafford Percy, and William Craven, Vauxhall Iron Works, Collyhurst-road, Manchester—Improvements in the manufacture and in machinery and apparatus used in the manufacture of bricks, tiles, pipes, and other articles made from plastic materials.
359. John Hackett, Derby—Improved fabric or fabrics for the manufacture of umbrellas, parasols, and buttons, and for other purposes.
360. John Hackett, Derby—Improved leather cloth, and the employment thereof for various useful purposes.
372. Samuel Kershaw and James Taylor, Heywood—Improvements in carding engines.
434. James Reddie, Anstruther, N.B.—Improved metal shovel.
436. Jesse Brickles and Thomas Thorpe, and Joseph Lillie, Manchester—Improvements in the manufacture of plain and ornamental woven fabrics.
450. Richard Archibald Brooman, 166, Fleet-street—Improvement in rollers used in spinning.
486. Andrew Hotchkiss, New York—Improvements in projectiles.
524. William Foster, Black Dike Mills, Bradford—Improvements in machinery or apparatus for cleansing wool and other fibrous materials.
531. James Murdoch, 7, Staple-inn, Holborn—Improved method of enlarging or reducing designs, maps, and other similar articles, also apparatus or machinery to be employed in the same.
921. Louis Alexandre Avisse, Paris—Improvements in lubricating revolving shafts of all descriptions, and also the axles of railway and other wheels.
1322. John Greenwood, Irwell-springs, near Bacup—Improvements in purifying oils.
1324. Samuel Colt, Pall-mall, and William Thomas Eley, Broad-street, Golden-square—Improvements in the manufacture of cartridges.
1366. William Clay, Liverpool—The application of certain descriptions of bar iron to purposes where great strength or stiffness is required.

Extension.

Sealed 14th August, 1855.

12. Alphonse René Le Mire de Normandy, 67, Judd-street, Brunswick-square—Improvements in the manufacture of soap. For three years from 8th September.

Letters Patent Cancelled—1853.

2744. William Calder, Glasgow—Improvements in the treatment and finishing of threads or yarns.—By order of the Lord Chancellor, dated 14th July, 1855.

Patent on which the Third Year's Stamp Duty is Paid—1852

264. Alfred Vincent Newton, 66, Chancery-lane—Improvements in apparatus for manufacturing gas and coke.

Sealed 17th August, 1855.

357. James Wright, 16, Park-street, Kennington—Improvements in the construction of furnaces for the purpose of consuming more effectually than heretofore the smoke contained therein.
364. George Redfield Chittenden, London—Improved apparatus for measuring fluids.
366. George Tillett, Clapham—Improvements in the construction of bedsteads.
367. David Hulett, Holborn—Improvements in apparatus for heating, cooking, and lighting by gas. (Partly a communication.)
376. Joshua Kidd, Kildwick, near Bradford—Improvements in machinery and apparatus for sewing and stitching cloth and other fabrics.
386. Frederic Prince, 3, South-parade, Chelsea—Improvements in fire-arms and ordnance.
402. William Henry Zahn, 13, Norfolk-street, Strand—Improvements in windmills.
409. Barnaby Angelo Murray, Dublin—Improvements in winding, doubling, and twisting silk, flax, and other fibrous substances.
414. William Brown, 113, Albany-road, Old Kent-road—Improvements in machinery for printing.
422. Thomas Nash, jun., 164, Great Dover-road—Improvements in painting brushes, applicable also to other brushes and to brooms.
439. Charles Frederick Stansbury, 17, Cornhill—An improved mode of ringing fog-bells. (A communication.)
494. William Hyde, Spring Hill, Ohio—Improved marine life-preserving apparatus.
785. Samuel Fielding, jun., Green, Rochdale—Improvements in apparatus for oiling or lubricating the pistons of steam engines.
819. Thomas Wimpenny, Holmfirth, and Jonas Wimpenny, Rawtenstall—Improvements in machinery or apparatus for drawing and spinning wool or wool mixed with other fibrous substances.
1307. Richard Anstey Tucker, Lenton, Nottingham—Using the gas and smoke arising from coal or other substances during the process of combustion for fuel.
1323. Samuel Colt, Pall-mall—An improvement in the construction of fire-arms.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3743	August 11.	The Prince's Shape for the Edges of Japanned Trays, Bread Baskets, &c.	Littlehales and Green	Birmingham.
3744	August 13.	A Reel	Edward Israel	Milk-street, Cheapside.
3745	August 14.	Percussion Cap and Cartouche Pouch ...	Charles Frederick Dennett, and George Pays	Notting-hill. 260, Oxford-street.
3746	August 16.	The Trouser Alliance	Samuel Benjamin Woolf	45, Old Bond Street.